



#4

SEQUENCE LISTING

<110> Cosgrove, Daniel J
McQueen-Mason, Simon
Guiltinan, Mark J
Shcherban, Tatyana
Shi, Jun

<120> PURIFIED EXPANSIN PROTEINS

<130> 1194/1C114US3

<140> 09/092,160
<141> 1998-06-05

<150> 08/440,517
<151> 1995-05-12

<150> 08/242,090
<151> 1994-05-12

<150> 08/060,944
<151> 1993-05-12

<160> 7

<170> PatentIn Ver. 2.1

<210> 1
<211> 681
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: cDNA cucumber
expansin

<400> 1
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accatgggtg gagcttgtgg gtatggaaat ttatacagcc aagggtatgg cacgaacacg
120
gtggcgctga gcactgcgt atttaacaat ggattaagtt gtggtgcttg cttcgaaatg
180
acttgtacaa acgaccctaa atggtgccctt ccggaaacta ttagggcac tgccaccaac
240
ttttgccctc ctaactttgc tctccctaac aacaatggtg gatggtgcaa ccctcctctc

300
caacacttcg acatggctga gcctgccttc cttcaaatacg ctcaataccg agctggatc
360
gtccccgtct ccttcgttag ggtaccatgt atgaagaaag gtggagttag gtttacaatc
420
aatggccact catacttcaa cctcgaaaaatc acacaaaacg tcgggtggcgc aggacgtc
480
cactctgtgt cgataaaagggt gtctcgaact ggatggcaat ccatgtcttag aaattggggc
540
caaaaactggc aaagcaacaa ctatctcaat ggccaaggcc tttccttca agtcaacttt
600
agtgatggtc gcactctcac tgcctataat ctcgttcctt ccaattggca atttggccaa
660
acctatgaag gccctcaattt c
681

<210> 2
<211> 228
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: rice expansin

<220>
<221> UNSURE
<222> 211
<223> Xaa is unknown or other.

<400> 2
Ala Gly Gly Gly Trp Val Asn Ala His Ala Thr Phe Tyr Gly Gly
1 5 10 15
Asp Ala Ser Gly Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
20 25 30
Ser Gln Gly Tyr Gly Thr Asn Thr Ala Ala Leu Ser Thr Ala Leu Phe
35 40 45
Asn Asn Gly Leu Ser Cys Gly Ala Cys Phe Glu Ile Arg Cys Gln Asn
50 55 60
Asp Gly Lys Trp Cys Leu Pro Gly Ser Ile Val Val Thr Ala Thr Asn
65 70 75 80
Phe Cys Pro Pro Asn Asn Ala Leu Pro Asn Asn Ala Gly Gly Trp Cys
85 90 95

Asn Pro Pro Gln Gln His Phe Asp Leu Ser Gln Pro Val Phe Gln Arg
100 105 110

Ile Ala Gln Tyr Arg Ala Gly Ile Val Pro Val Ala Tyr Arg Arg Val
115 120 125

Pro Cys Val Arg Arg Gly Gly Ile Arg Phe Thr Ile Asn Gly His Ser
130 135 140

Tyr Phe Asn Leu Val Leu Ile Thr Asn Val Gly Gly Ala Gly Asp Val
145 150 155 160

His Ser Ala Met Val Lys Gly Ser Arg Thr Gly Trp Gln Ala Met Ser
165 170 175

Arg Asn Trp Gly Gln Asn Trp Gln Ser Asn Ser Tyr Leu Asn Gly Gln
180 185 190

Ser Leu Ser Phe Lys Val Thr Thr Ser Asp Gly Gln Thr Ile Val Ser
195 200 205

Asn Asn Xaa Ala Asn Ala Gly Trp Ser Phe Gly Gln Thr Phe Thr Gly
210 215 220

Ala His Val Arg
225

<210> 3

<211> 222

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: rice expansin

<220>

<221> UNSURE

<222> (14)..(58)

<223> Xaa is unknown or other.

<400> 3

His Met Gly Pro Trp Ile Asn Ala His Ala Thr Phe Tyr Xaa Xaa Gly
1 5 10 15

Asp Ala Xaa Xaa Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
20 25 30

Ser Gln Gly Tyr Gly Leu Glu Thr Ala Ala Leu Ser Thr Ala Leu Phe
35 40 45

Asp Gln Gly Leu Ser Cys Gly Ala Cys Xaa Glu Leu Met Cys Val Asn
50 55 60

Asp Pro Gln Trp Cys Ile Lys Gly Arg Ser Ile Val Val Thr Ala Thr
65 70 75 80

Asn Phe Cys Pro Pro Gly Gly Ala Cys Asp Pro Pro Asn His His Phe
85 90 95

Asp Leu Ser Gln Pro Ile Tyr Glu Lys Ile Ala Leu Tyr Lys Ser Gly
100 105 110

Ile Ile Pro Val Met Tyr Arg Arg Val Arg Cys Lys Arg Ser Gly Gly
115 120 125

Ile Arg Phe Thr Ile Asn Gly His Ser Tyr Phe Asn Leu Val Leu Val
130 135 140

Thr Asn Val Gly Gly Ala Gly Asp Val His Ser Val Ser Met Lys Gly
145 150 155 160

Ser Arg Thr Lys Trp Gln Leu Met Ser Arg Asn Trp Gly Gln Asn Trp
165 170 175

Gln Ser Asn Ser Tyr Leu Asn Gly Gln Ser Leu Ser Phe Val Val Thr
180 185 190

Thr Ser Asp Arg Arg Ser Val Val Ser Phe Asn Val Ala Pro Pro Thr
195 200 205

Trp Ser Phe Gly Gln Thr Tyr Thr Gly Gly Gln Phe Arg Tyr
210 215 220

<210> 4

<211> 227

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Arabidopsis
expansin

<220>

<221> UNSURE

<222> (2)...(227)

<223> Xaa is unknown or other.

<400> 4

Lys Xaa Ser Val Ala Gln Ser Ala Phe Ala Thr Phe Tyr Gly Gly Lys
1 5 10 15

Asp Gly Ser Cys Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
20 25 30

Asn Ala Gly Tyr Gly Leu Tyr Asn Ala Ala Leu Ser Ser Ala Leu Phe
35 40 45

Asn Asp Gly Ala Met Cys Gly Ala Cys Tyr Thr Ile Thr Cys Asp Thr
50 55 60

Ser Gln Thr Lys Trp Cys Lys Pro Gly Gly Asn Ser Ile Thr Ile Thr
65 70 75 80

Ala Thr Asn Leu Cys Xaa Pro Asn Trp Ala Leu Pro Ser Asn Ser Gly
85 90 95

Gly Trp Cys Asn Pro Pro Leu Xaa His Phe Asp Met Ser Gln Pro Ala
100 105 110

Trp Glu Asn Ile Ala Val Tyr Gln Ala Gly Ile Val Pro Val Asn Tyr
115 120 125

Lys Arg Val Pro Xaa Gln Arg Ser Gly Gly Ile Arg Phe Ala Ile Ser
130 135 140

Gly His Asp Tyr Phe Glu Leu Val Thr Val Thr Asn Val Gly Gly Ser
145 150 155 160

Gly Val Val Ala Gln Met Ser Ile Lys Gly Ser Asn Thr Gly Trp Met
165 170 175

Ala Met Ser Arg Asn Trp Gly Ala Asn Trp Gln Ser Asn Ala Tyr Leu
180 185 190

Ala Gly Gln Ser Leu Ser Phe Ile Val Gln Leu Asp Asp Gly Arg Lys
195 200 205

Val Thr Ala Trp Asn Xaa Ala Pro Xaa Asn Trp Leu Xaa Xaa Xaa Xaa
210 215 220

Xaa Xaa Xaa
225

<210> 5
<211> 225
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Arabidopsis
expansin

<400> 5
Asp Asn Gly Gly Trp Glu Arg Gly His Ala Thr Phe Tyr Gly Gly Ala
1 5 10 15

Asp Ala Ser Gly Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu His
20 25 30

Ser Gln Gly Tyr Gly Leu Gln Thr Ala Ala Leu Ser Thr Ala Leu Phe
35 40 45

Asn Ser Gly Gln Lys Cys Gly Ala Cys Phe Glu Leu Thr Cys Glu Asp
50 55 60

Asp Pro Glu Trp Cys Ile Pro Gly Ser Ile Ile Val Arg Tyr Asn Leu
65 70 75 80

Ala Asn Phe Ala Leu Ala Asn Asp Asn Gly Gly Trp Cys Asn Pro Pro
85 90 95

Leu Lys His Phe Asp Leu Ala Glu Pro Ala Phe Leu Gln Ile Ala Gln
100 105 110

Tyr Arg Ala Gly Ile Val Pro Val Ala Phe Arg Arg Val Pro Cys Glu
115 120 125

Lys Gly Gly Gly Ile Arg Phe Thr Ile Asn Gly Asn Pro Tyr Phe Asp
130 135 140

Leu Val Leu Ile Thr Asn Val Gly Gly Ala Gly Asp Ile Arg Ala Val
145 150 155 160

Ser Leu Lys Gly Ser Lys Thr Asp Gln Trp Gln Ser Met Ser Arg Asn
165 170 175

Trp Gly Gln Asn Trp Gln Ser Asn Thr Tyr Leu Arg Gly Gln Ser Leu
180 185 190

Ser Phe Gln Val Thr Asp Ser Asp Gly Arg Thr Val Val Ser Tyr Asp

195

200

205

Val Val Pro His Asp Trp Gln Phe Gly Gln Thr Phe Glu Gly Gly Gln
210 215 220

Phe
225

<210> 6
<211> 226
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Arabidopsis
expansin

<400> 6
Asp Tyr Ser Ser Trp Gln Ser Ala His Ala Thr Phe Tyr Gly Gly Gly
1 5 10 15

Asp Ala Ser Gly Thr Met Gly Gly Thr Cys Gly Tyr Gly Asn Leu Tyr
20 25 30

Ser Thr Gly Tyr Thr Asn Thr Ala Ala Leu Ser Thr Val Leu Phe Asn
35 40 45

Asp Gly Ala Ala Cys Arg Ser Cys Tyr Glu Leu Arg Cys Asp Asn Asp
50 55 60

Gly Gln Trp Cys Leu Pro Gly Ser Val Thr Val Thr Ala Thr Asn Leu
65 70 75 80

Cys Pro Pro Asn Tyr Ala Leu Pro Asn Asp Asp Gly Gly Trp Cys Asn
85 90 95

Pro Pro Arg Pro His Phe Asp Met Ala Glu Pro Ala Phe Leu Gln Ile
100 105 110

Gly Val Tyr Arg Ala Gly Ile Val Pro Val Ser Tyr Arg Arg Val Pro
115 120 125

Cys Val Lys Lys Gly Gly Ile Arg Phe Thr Ile Asn Gly His Ser Tyr
130 135 140

Phe Asn Leu Val Leu Val Thr Asn Val Ala Gly Pro Gly Asp Val Gln
145 150 155 160

Ser Val Ser Ile Lys Gly Ser Ser Thr Gly Trp Gln Pro Met Ser Arg
165 170 175

Asn Trp Gly Gln Asn Trp Gln Ser Asn Ser Tyr Leu Asp Gly Gln Ser
180 185 190

Leu Ser Phe Gln Val Ala Val Ser Asp Gly Arg Thr Val Thr Ser Asn
195 200 205

Asn Val Val Pro Ala Gly Trp Gln Phe Gly Gln Thr Phe Glu Gly Gly
210 215 220

Gln Phe
225

<210> 7

<211> 227

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: cucumber
expansin

<400> 7

Asp Tyr Gly Gly Trp Gln Ser Gly His Ala Thr Phe Tyr Gly Gly
1 5 10 15

Asp Ala Ser Gly Thr Met Gly Gly Ala Cys Gly Tyr Gly Asn Leu Tyr
20 25 30

Ser Gln Gly Tyr Gly Thr Asn Thr Val Ala Leu Ser Thr Ala Leu Phe
35 40 45

Asn Asn Gly Leu Ser Cys Gly Ala Cys Phe Glu Met Thr Cys Thr Asn
50 55 60

Asp Pro Lys Trp Cys Leu Pro Gly Thr Ile Arg Val Thr Ala Thr Asn
65 70 75 80

Phe Cys Pro Pro Asn Phe Ala Leu Pro Asn Asp Asp Gly Gly Trp Cys
85 90 95

Asn Pro Pro Leu Gln His Phe Asp Met Ala Glu Pro Ala Phe Leu Gln
100 105 110

Ile Ala Gln Tyr Arg Ala Gly Ile Val Pro Val Ser Phe Arg Arg Val

115

120

125

Pro Cys Met Lys Lys Gly Gly Val Arg Phe Thr Ile Asn Gly His Ser
130 135 140

Tyr Phe Asn Leu Val Leu Ile Thr Asn Val Gly Gly Ala Gly Asp Val
145 150 155 160

His Ser Val Ser Ile Lys Gly Ser Arg Thr Gly Trp Gln Ser Met Ser
165 170 175

Arg Asn Trp Gly Gln Asn Trp Gln Ser Asn Asn Tyr Leu Asn Gly Gln
180 185 190

Gly Leu Ser Phe Gln Val Thr Leu Ser Asp Gly Arg Thr Leu Thr Ala
195 200 205

Tyr Asn Leu Val Pro Ser Asn Trp Gln Phe Gly Gln Thr Tyr Glu Gly
210 215 220

Pro Gln Phe
225